

SEQUENCE LISTING

10450X (1) GENERAL INFORMATION:

(i) APPLICANT: MARKLAND, William
LADNER, Robert Charles

(ii) TITLE OF INVENTION: KALLIKREIN-INHIBITING "KUNITZ
DOMAIN" PROTEINS AND ANALOGUES THEREOF

(iii) NUMBER OF SEQUENCES: 70

(iv) CORRESPONDENCE ADDRESS:

- (A) ADDRESSEE: Yankwich & Associates
- (B) STREET: 130 Bishop Allen Drive, fifth floor
- (C) CITY: Cambridge
- (D) STATE: Massachusetts
- (E) COUNTRY: United States of America
- (F) ZIP: 02139

(v) COMPUTER READABLE FORM:

- (A) MEDIUM TYPE: floppy disk
- (B) COMPUTER: IBM PC compatible
- (C) OPERATING SYSTEM: PC-DOS/MS-DOS
- (D) SOFTWARE: Word for Windows 6.1

B (vi) CURRENT APPLICATION DATA:

- (A) APPLICATION NUMBER: 08/676,125
- (B) FILING DATE: 25 September 1996
- (C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA:

- (A) APPLICATION NUMBER: PCT/US95/00299
- (B) FILING DATE: 11 January 1995

(vii) PRIOR APPLICATION DATA:

- (A) APPLICATION NUMBER: 08/179,964
- (B) FILING DATE: 11 January 1994

(vii) PRIOR APPLICATION DATA:

- (A) APPLICATION NUMBER: 08/208,264
- (B) FILING DATE: 10 March 1994

(viii) ATTORNEY/AGENT INFORMATION:

- (A) NAME: YANKWICH, Leon R.
- 45

(B) REGISTRATION NUMBER: 30,237
 (C) REFERENCE/DOCKET NUMBER: DYX-006.2P US

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: (617) 491-4343
 (B) TELEFAX: (617) 491-8801

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH:8 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Ile Val Gly Gly Thr Asn Ser Ser
 1 5

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH:58 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala
 1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
 20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala

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(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	Pro	Cys	Lys	Ala
1				5					10					15	
Ile	Met	Lys	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20				25						30		
Phe	Ile	Tyr	Gly	Gly	Cys	Glu	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
		35					40						45		
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
		50				55									

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	His	Cys	Lys	Ala
1				5					10					15	
Asn	His	Gln	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20				25						30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu

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Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Asp Gly His Cys Lys Ala
 1 5 10 15

Ser Leu Pro Arg Phe Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
 20 25 30

Phe Ile Tyr Gly Gly Cys Glu Gly Asn Gln Asn Arg Phe Glu Ser Leu
 35 40 45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Asp Gly Pro Cys Lys Ala
 1 5 10 15

Asn His Leu Arg Phe Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu

48

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
50 55

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
50 55

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Asn His Gln Arg Phe Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Gln
 20 25 30

Phe Thr Tyr Gly Gly Cys Ala Gly Asn Gln Asn Arg Phe Glu Ser Leu
 35 40 45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55

(2) INFORMATION FOR SEQ ID NO:9:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Asp Gly His Cys Lys Ala
 1 5 10 15

Ser Leu Pro Arg Phe Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
 20 25 30

Phe Ile Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
 35 40 45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55

(2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

50

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	His	Cys	Lys	Ala
1				5					10					15	
Asn	His	Gln	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
		35					40					45			
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
	50					55									

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

21
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Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	His	Cys	Lys	Ala
1				5					10					15	
Asn	His	Gln	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
		35					40					45			
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
	50					55									

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- 51

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	His	Cys	Lys	Ala
1				5					10					15	
Asn	His	Gln	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
			35					40					45		
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
			50				55								

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

21 cont.

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	His	Cys	Lys	Ala
1				5					10					15	
Asn	His	Gln	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
			35					40					45		
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
			50				55								

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single

52

(D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	His	Cys	Lys	Gly
1				5					10					15	
Ala	His	Leu	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ile	Tyr	Gly	Gly	Cys	Glu	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
		35					40					45			
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
	50					55									

(2) INFORMATION FOR SEQ ID NO:15:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	Arg	Cys	Lys	Gly
1				5					10					15	
Ala	His	Leu	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ile	Tyr	Gly	Gly	Cys	Glu	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
		35					40					45			
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
	50					55									

(2) INFORMATION FOR SEQ ID NO:16:

- (i) SEQUENCE CHARACTERISTICS

53

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	Pro	Cys	Lys	Ala
1				5				10						15	
Ile	His	Leu	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ile	Tyr	Gly	Gly	Cys	Glu	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
			35					40					45		
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
			50					55							

(2) INFORMATION FOR SEQ ID NO:17:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	His	Cys	Lys	Ala
1				5				10						15	
Asn	His	Gln	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
			35					40					45		
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
			50					55							

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(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:304 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Met Ile Tyr Thr Met Lys Lys Val His Ala Leu Trp Ala Ser Val Cys
 1 5 10 15
 Leu Leu Leu Asn Leu Ala Pro Ala Pro Leu Asn Ala Asp Ser Glu Glu
 20 25 30
 Asp Glu Glu His Thr Ile Ile Thr Asp Thr Glu Leu Pro Pro Leu Lys
 35 40 45
 Leu Met His Ser Phe Cys Ala Phe Lys Ala Asp Asp Gly Pro Cys Lys
 50 55 60
 Ala Ile Met Lys Arg Phe Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu
 65 70 75 80
 Glu Phe Ile Tyr Gly Gly Cys Glu Gly Asn Gln Asn Arg Phe Glu Ser
 85 90 95
 Leu Glu Glu Cys Lys Lys Met Cys Thr Arg Asp Asn Ala Asn Arg Ile
 100 105 110
 Ile Lys Thr Thr Leu Gln Gln Glu Lys Pro Asp Phe Cys Phe Leu Glu
 115 120 125
 Glu Asp Pro Gly Ile Cys Arg Gly Tyr Ile Thr Arg Tyr Phe Tyr Asn
 130 135 140
 Asn Gln Thr Lys Gln Cys Glu Arg Phe Lys Tyr Gly Gly Cys Leu Gly
 145 150 155 160
 Asn Met Asn Asn Phe Glu Thr Leu Glu Glu Cys Lys Asn Ile Cys Glu
 165 170 175

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Asp Gly Pro Asn Gly Phe Gln Val Asp Asn Tyr Gly Thr Gln Leu Asn
180 185 190

Ala Val Asn Asn Ser Leu Thr Pro Gln Ser Thr Lys Val Pro Ser Leu
195 200 205

Phe Glu Phe His Gly Pro Ser Trp Cys Leu Thr Pro Ala Asp Arg Gly
210 215 220

Leu Cys Arg Ala Asn Glu Asn Arg Phe Tyr Tyr Asn Ser Val Ile Gly
225 230 235 240

Lys Cys Arg Pro Phe Lys Tyr Ser Gly Cys Gly Gly Asn Glu Asn Asn
245 250 255

Phe Thr Ser Lys Gln Glu Cys Leu Arg Ala Cys Lys Lys Gly Phe Ile
260 265 270

Gln Arg Ile Ser Lys Gly Gly Leu Ile Lys Thr Lys Arg Lys Arg Lys
275 280 285

Lys Gln Arg Val Lys Ile Ala Tyr Glu Glu Ile Phe Val Lys Asn Met
290 295 300

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Gly Gly Arg Cys Arg Gly
1 5 10 15

Ala His Pro Arg Trp Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
20 25 30

Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
35 40 45

56

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
50 55

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Gly Gly Arg Cys Arg Gly
1 5 10 15

Ala His Pro Arg Trp Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
20 25 30

Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
35 40 45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
50 55

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Asp Gly Pro Cys Arg Ala
1 5 10 15

Ala His Pro Arg Trp Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
20 25 30

Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu

57

35

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Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Asp Gly Pro Cys Arg Ala
 1 5 10 15

Ala His Pro Arg Trp Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
 20 25 30

Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
 35 40 45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Val Gly Arg Cys Arg Gly
 1 5 10 15

Ala His Pro Arg Trp Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu

58

30

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
50 55

(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 58 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
35 40 45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
50 55

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

59

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1		5		10		15									
Ala	His	Leu	Arg	Trp	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
		20					25						30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
		35					40					45			
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
		50				55									

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Glu	Gly	Gly	Ser	Cys	Arg	Ala
1				5					10					15	
Ala	His	Gln	Arg	Trp	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
		20					25					30			
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
		35					40					45			
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
		50				55									

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

60

Met His Ser Phe Cys Ala Phe Lys Ala Asp Asp Gly Pro Cys Arg Gly
 1 5 10 15

Ala His Leu Arg Phe Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
 20 25 30

Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
 35 40 45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55

(2) INFORMATION FOR SEQ ID NO:28:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Asp Gly His Cys Arg Gly
 1 5 10 15

Ala Leu Pro Arg Trp Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
 20 25 30

Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
 35 40 45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55

(2) INFORMATION FOR SEQ ID NO:29:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Ser Gly Asn Cys Arg Gly
 1 5 10 15
 Asn Leu Pro Arg Phe Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
 20 25 30
 Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
 35 40 45
 Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55

(2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Ser Gly Arg Cys Arg Gly
 1 5 10 15
 Asn His Gln Arg Phe Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
 20 25 30
 Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
 35 40 45
 Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55

(2) INFORMATION FOR SEQ ID NO:31:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single

62

(D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Gly	Gly	Arg	Cys	Arg	Ala
1				5					10					15	
Ile	Gln	Pro	Arg	Trp	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
		35					40					45			
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
	50					55									

(2) INFORMATION FOR SEQ ID NO:32:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH:58 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

21 Cont.

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	Arg	Cys	Arg	Gly
1				5					10					15	
Ala	His	Pro	Arg	Trp	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Gln	Asn	Arg	Phe	Glu	Ser	Leu
		35					40					45			
Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp						
	50					55									

(2) INFORMATION FOR SEQ ID NO:33:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Lys	Pro	Asp	Phe	Cys	Phe	Leu	Glu	Glu	Asp	Pro	Gly	Ile	Cys	Arg	Gly
1				5					10					15	
Tyr	Ile	Thr	Arg	Tyr	Phe	Tyr	Asn	Asn	Gln	Thr	Lys	Gln	Cys	Glu	Arg
			20					25					30		
Phe	Lys	Tyr	Gly	Gly	Cys	Leu	Gly	Asn	Met	Asn	Asn	Phe	Glu	Thr	Leu
			35				40						45		
Glu	Glu	Cys	Lys	Asn	Ile	Cys	Glu	Asp	Gly						
			50				55								

(2) INFORMATION FOR SEQ ID NO:34:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Lys	Pro	Asp	Phe	Cys	Phe	Leu	Glu	Glu	Asp	Gly	Gly	Arg	Cys	Arg	Gly
1				5					10					15	
Ala	His	Pro	Arg	Trp	Phe	Tyr	Asn	Asn	Gln	Thr	Lys	Gln	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Met	Asn	Asn	Phe	Glu	Thr	Leu
			35				40						45		
Glu	Glu	Cys	Lys	Asn	Ile	Cys	Glu	Asp	Gly						
			50				55								

B1
Cont.

64

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Gly Pro Ser Trp Cys Leu Thr Pro Ala Asp Arg Gly Leu Cys Arg Ala
 1 5 10 15

Asn Glu Asn Arg Phe Tyr Tyr Asn Ser Val Ile Gly Lys Cys Arg Pro
 20 25 30

Phe Lys Tyr Ser Gly Cys Gly Gly Asn Glu Asn Asn Phe Thr Ser Lys
 35 40 45

Gln Glu Cys Leu Arg Ala Cys Lys Lys Gly
 50 55

(2) INFORMATION FOR SEQ ID NO:36:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Gly Pro Ser Trp Cys Leu Thr Pro Ala Asp Asp Gly Pro Cys Arg Ala
 1 5 10 15

Ala His Pro Arg Phe Tyr Tyr Asn Ser Val Ile Gly Lys Cys Glu Pro
 20 25 30

Phe Ser Tyr Ser Gly Cys Gly Gly Asn Glu Asn Asn Phe Thr Ser Lys
 35 40 45

65

Gln Glu Cys Leu Arg Ala Cys Lys Lys Gly
50 55

(2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS
 (A) LENGTH:58 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

Glu Thr Asp Ile Cys Lys Leu Pro Lys Asp Glu Gly Thr Cys Arg Asp
1 5 10 15
 Phe Ile Leu Lys Trp Tyr Tyr Asp Pro Asn Thr Lys Ser Cys Ala Arg
20 25 30
 Phe Trp Tyr Gly Gly Cys Gly Gly Asn Glu Asn Lys Phe Gly Ser Gln
35 40 45
 Lys Glu Cys Glu Lys Val Cys Ala Pro Val
50 55

(2) INFORMATION FOR SEQ ID NO:38:

- (i) SEQUENCE CHARACTERISTICS
 (A) LENGTH:58 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Glu Thr Asp Ile Cys Lys Leu Pro Lys Asp Glu Gly Thr Cys Arg Ala
1 5 10 15
 Ala His Leu Lys Trp Tyr Tyr Asp Pro Asn Thr Lys Ser Cys Ala Glu
20 25 30
 Phe Ser Tyr Gly Gly Cys Gly Gly Asn Glu Asn Lys Phe Gly Ser Gln

B1
Cont

66

35

40

45

Lys Glu Cys Glu Lys Val Cys Ala Pro Val
 50 55

(2) INFORMATION FOR SEQ ID NO:39:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Asn Ala Glu Ile Cys Leu Leu Pro Leu Asp Tyr Gly Pro Cys Arg Ala
 1 5 10 15

Leu Leu Leu Arg Tyr Tyr Tyr Asp Arg Tyr Thr Gln Ser Cys Arg Gln
 20 25 30

Phe Leu Tyr Gly Gly Cys Glu Gly Asn Ala Asn Asn Phe Tyr Thr Trp
 35 40 45

Glu Ala Cys Asp Asp Ala Cys Trp Arg Ile
 50 55

(2) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Asn Ala Glu Ile Cys Leu Leu Pro Leu Asp Gly Gly Pro Cys Arg Ala
 1 5 10 15

Ala His Leu Arg Tyr Tyr Tyr Asp Arg Tyr Thr Gln Ser Cys Glu Gln
 20 25 30

B1
Cont.

67

Phe Ser Tyr Gly Gly Cys Glu Gly Asn Ala Asn Asn Phe Tyr Thr Trp
 35 40 45

Glu Ala Cys Asp Asp Ala Cys Trp Arg Ile
 50 55

(2) INFORMATION FOR SEQ ID NO:41:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:61 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Val Pro Lys Val Cys Arg Leu Gln Val Ser Val Asp Asp Gln Cys Glu
 1 5 10 15

Gly Ser Thr Glu Lys Tyr Phe Phe Asn Leu Ser Ser Met Thr Cys Glu
 20 25 30

Lys Phe Phe Ser Gly Gly Cys His Arg Asn Arg Ile Glu Asn Arg Phe
 35 40 45

Pro Asp Glu Ala Thr Cys Met Gly Phe Cys Ala Pro Lys
 50 55 60

(2) INFORMATION FOR SEQ ID NO:42:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:61 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Val Pro Lys Val Cys Arg Leu Gln Val Ser Val Asp Asp Gln Cys Arg
 1 5 10 15

68

Ala Ala His Pro Lys Tyr Phe Phe Asn Leu Ser Ser Met Thr Cys Glu
 20 25 30

Glu Phe Phe Ser Gly Gly Cys His Arg Asn Arg Ile Glu Asn Arg Phe
 35 40 45

Pro Asp Glu Ala Thr Cys Met Gly Phe Cys Ala Pro Lys
 50 55 60

(2) INFORMATION FOR SEQ ID NO:43:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Ile Pro Ser Phe Cys Tyr Ser Pro Lys Asp Glu Gly Leu Cys Ser Ala
 1 5 10 15

Asn Val Thr Arg Tyr Tyr Phe Asn Pro Arg Tyr Arg Thr Cys Asp Ala
 20 25 30

Phe Thr Tyr Thr Gly Cys Gly Gly Asn Asp Asn Asn Phe Val Ser Arg
 35 40 45

Glu Asp Cys Lys Arg Ala Cys Ala Lys Ala
 50 55

(2) INFORMATION FOR SEQ ID NO:44:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Ile Pro Ser Phe Cys Tyr Ser Pro Lys Asp Glu Gly His Cys Arg Ala
 1 5 10 15

Ala His Gln Arg Tyr Tyr Phe Asn Pro Arg Tyr Arg Thr Cys Asp Ala
 20 25 30

Phe Thr Tyr Thr Gly Cys Gly Gly Asn Asp Asn Asn Phe Val Ser Arg
 35 40 45

Glu Asp Cys Lys Arg Ala Cys Ala Lys Ala
 50 55

(2) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala Gly Pro Cys Met Gly
 1 5 10 15

Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser Met Ala Cys Glu Thr
 20 25 30

Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Val Thr Glu
 35 40 45

Lys Glu Cys Leu Gln Thr Cys Arg Thr Val
 50 55

(2) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Lys Glu Asp Ser Cys Gln Leu Gly Tyr Asp Ala Gly Pro Cys Arg Gly
 1 5 10 15
 Ala His Pro Arg Tyr Phe Tyr Asn Gly Thr Ser Met Ala Cys Glu Thr
 20 25 30
 Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gly Asn Asn Phe Val Thr Glu
 35 40 45
 Lys Glu Cys Leu Gln Thr Cys Arg Thr Val
 50 55

(2) INFORMATION FOR SEQ ID NO:47:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

Thr Val Ala Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala
 1 5 10 15
 Phe Ile Gln Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu
 20 25 30
 Phe Pro Tyr Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu
 35 40 45
 Lys Glu Cys Arg Glu Tyr Cys Gly Val Pro
 50 55

(2) INFORMATION FOR SEQ ID NO:48:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single

71

(D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Thr	Val	Ala	Ala	Cys	Asn	Leu	Pro	Ile	Asp	Asp	Gly	Pro	Cys	Arg	Ala
1				5					10					15	
Ala	His	Gln	Leu	Trp	Ala	Phe	Asp	Ala	Val	Lys	Gly	Lys	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Glu	Gly	Asn	Gly	Asn	Lys	Phe	Tyr	Ser	Glu
		35					40					45			
Lys	Glu	Cys	Arg	Glu	Tyr	Cys	Gly	Val	Pro						
	50					55									

(2) INFORMATION FOR SEQ ID NO:49:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH:58 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

B1 Cont.

Thr	Val	Ala	Ala	Cys	Asn	Leu	Pro	Ile	Asp	Asp	Gly	Pro	Cys	Arg	Ala
1				5					10					15	
Ala	His	Gln	Arg	Trp	Ala	Phe	Asp	Ala	Val	Lys	Gly	Lys	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gln	Gly	Asn	Gly	Asn	Lys	Phe	Tyr	Ser	Glu
		35					40					45			
Lys	Glu	Cys	Arg	Glu	Tyr	Cys	Gly	Val	Pro						
	50					55									

(2) INFORMATION FOR SEQ ID NO:50:

- (i) SEQUENCE CHARACTERISTICS

72

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

Val	Arg	Glu	Val	Cys	Ser	Glu	Gln	Ala	Glu	Thr	Gly	Pro	Cys	Arg	Ala
1				5					10					15	
Met	Ile	Ser	Arg	Trp	Tyr	Phe	Asp	Val	Thr	Glu	Gly	Lys	Cys	Ala	Pro
			20					25					30		
Phe	Phe	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Arg	Asn	Asn	Phe	Asp	Thr	Glu
		35					40					45			
Glu	Tyr	Cys	Met	Ala	Val	Cys	Gly	Ser	Ala						
	50					55									

(2) INFORMATION FOR SEQ ID NO:51:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

B1 Cont

Val	Arg	Glu	Val	Cys	Ser	Glu	Gln	Ala	Glu	Thr	Gly	Pro	Cys	Arg	Ala
1				5					10					15	
Ala	His	Pro	Arg	Trp	Tyr	Phe	Asp	Val	Thr	Glu	Gly	Lys	Cys	Glu	Glu
			20					25					30		
Phe	Ser	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Arg	Asn	Asn	Phe	Asp	Thr	Glu
		35					40					45			
Glu	Tyr	Cys	Met	Ala	Val	Cys	Gly	Ser	Ala						
	50					55									

(2) INFORMATION FOR SEQ ID NO:52:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

```

Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Cys Xaa Xaa
 1                      5                      10                      15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa
                20                      25                      30

Phe Xaa Xaa Xaa Gly Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 35                      40                      45

Xaa Xaa Cys Xaa Xaa Xaa Cys Xaa Xaa Xaa
 50                      55

```

(2) INFORMATION FOR SEQ ID NO:53:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

```

Leu Pro Asn Val Cys Ala Phe Pro Met Glu Lys Gly Pro Cys Gln Thr
 1                      5                      10                      15

Tyr Met Thr Arg Trp Phe Phe Asn Phe Glu Thr Gly Glu Cys Glu Leu
                20                      25                      30

Phe Ala Tyr Gly Gly Cys Gly Gly Asn Ser Asn Asn Phe Leu Arg Lys
 35                      40                      45

Glu Lys Cys Glu Lys Phe Cys Lys Phe Thr
 50                      55

```

(2) INFORMATION FOR SEQ ID NO:54:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

Leu	Pro	Asn	Val	Cys	Ala	Phe	Pro	Met	Glu	Asp	Gly	Pro	Cys	Arg	Ala
1				5					10					15	
Ala	His	Pro	Arg	Trp	Phe	Phe	Asn	Phe	Glu	Thr	Gly	Glu	Cys	Glu	Glu
			20				25						30		
Phe	Ala	Tyr	Gly	Gly	Cys	Gly	Gly	Asn	Ser	Asn	Asn	Phe	Leu	Arg	Lys
		35					40					45			
Glu	Lys	Cys	Glu	Lys	Phe	Cys	Lys	Phe	Thr						
	50					55									

(2) INFORMATION FOR SEQ ID NO:55:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

Arg	Pro	Asp	Phe	Cys	Leu	Glu	Pro	Pro	Glu	Thr	Gly	Pro	Cys	Arg	Ala
1				5					10					15	
Ala	His	Pro	Arg	Tyr	Phe	Tyr	Asn	Ala	Lys	Ala	Gly	Leu	Cys	Glu	Glu
			20				25						30		
Phe	Val	Tyr	Gly	Gly	Cys	Gly	Ala	Lys	Arg	Asn	Asn	Phe	Lys	Ser	Ala
		35					40					45			

75

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

(2) INFORMATION FOR SEQ ID NO:56:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:186 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE:other nucleic acid

- (A) DESCRIPTION:synthetic DNA fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

GCCGAGATGC	ATTCCTTCTG	CGCCTTCAAG	GCTGATGATG	GTCNTTGTA	50
AGSTNNTNNS	NNGCGTTTCT	TCTTCAACAT	CTTCACGCGT	CAGTGCSAGS	100
AATTCNNSTA	CGGTGGTTGT	NNSGGTAACC	AGAACCGGTT	CGAATCTCTA	150
GAGGAATGTA	AGAAGATGTG	CACTCGTGAC	GGCGCC		186

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:62 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Ala	Glu	Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Asp	Asp	Gly	Xaa	Cys
1				5					10					15	
Lys	Xaa	Xaa	Xaa	Xaa	Arg	Phe	Phe	Phe	Asn	Ile	Phe	Thr	Arg	Gln	Cys
			20					25					30		
Xaa	Xaa	Phe	Xaa	Tyr	Gly	Gly	Cys	Xaa	Gly	Asn	Gln	Asn	Arg	Phe	Glu
		35					40					45			
Ser	Leu	Glu	Glu	Cys	Lys	Lys	Met	Cys	Thr	Arg	Asp	Gly	Ala		

76

50

55

60

(2) INFORMATION FOR SEQ ID NO:58:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:4 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Lys Arg Pro Arg

1

(2) INFORMATION FOR SEQ ID NO:59:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:13 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: other nucleic acid

- (A) DESCRIPTION: synthetic DNA fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

AAAAGGCCTC GAG

13

(2) INFORMATION FOR SEQ ID NO:60:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

Lys Arg Glu Ala Ala Glu Pro Trp Gly Ala Xaa Xaa Leu Glu

77

1

5

10

(2) INFORMATION FOR SEQ ID NO:61:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:42 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE:other nucleic acid

- (A) DESCRIPTION:synthetic DNA fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

AAAAGGGAAG CGGCCGAGCC ATGGGGCGCC TAATAGCTCG AG

42

(2) INFORMATION FOR SEQ ID NO:62:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH:66 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

Lys Arg Glu Ala Ala Glu Met His Ser Phe Cys Ala Phe Lys Ala Asp
 1 5 10 15

Asp Gly Pro Cys Lys Ala Ile Met Lys Arg Phe Phe Phe Asn Ile Phe
 20 25 30

Thr Arg Gln Cys Glu Glu Phe Ile Tyr Gly Gly Cys Glu Gly Asn Gln
 35 40 45

Asn Arg Phe Glu Ser Leu Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50 55 60

Gly Ala
 65

(2) INFORMATION FOR SEQ ID NO:63:

78

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 210 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: other nucleic acid

- (A) DESCRIPTION: synthetic DNA fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 63:

```

AAAAGGGAAG CGGCCGAGAT GCATTCCTTC TCGCCTTTCA AAGCTGATGA      50
CGGTCCGTGT AAAGCTATCA TGAAACGTTT CTTCTTCAAC ATTTTCACGC     100
GTCAGTGCGA GGAATTCATT TACGGTGGTT GTGAAGGTAA CCAGAACCGG     150
TTCGAATCTC TAGAGGAATG TAAGAAGATG TGCACCTCGTG ACGGCGCCTA     200
ATAGCTCGAG                                     210

```

(2) INFORMATION FOR SEQ ID NO: 64:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 64:

B1 Cont

```

Met His Ser Phe Cys Ala Phe Lys Ala Asp Asp Gly His Cys Ala Ala
 1              5              10              15

Asn His Gln Arg Phe Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
          20              25              30

Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
 35              40              45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
 50              55

```

(2) INFORMATION FOR SEQ ID NO: 65:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 58 amino acids
- (B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Gly Gly Arg Cys Ala Gly
1 5 10 15

Ala His Pro Arg Trp Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
20 25 30

Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
35 40 45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
50 55

(2) INFORMATION FOR SEQ ID NO:66:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH:58 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

Met His Ser Phe Cys Ala Phe Lys Ala Asp Asp Gly Pro Cys Ser Ala
1 5 10 15

Ala His Pro Arg Trp Phe Phe Asn Ile Phe Thr Arg Gln Cys Glu Glu
20 25 30

Phe Ser Tyr Gly Gly Cys Gly Gly Asn Gln Asn Arg Phe Glu Ser Leu
35 40 45

Glu Glu Cys Lys Lys Met Cys Thr Arg Asp
50 55

(2) INFORMATION FOR SEQ ID NO:67:

80

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 97 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: other nucleic acid

- (A) DESCRIPTION: synthetic DNA fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 67:

CCTCCTATGC ATTCCTTCTG CGCCTTCAAG GCTRASRNTG GTNNTTGTAR	50
AGSTRNTCNS CNSCGTTKST TCTTCAACAT CTTACGCGT TCCCTCC	97

(2) INFORMATION FOR SEQ ID NO: 68:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 23 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: other nucleic acid

- (A) DESCRIPTION: synthetic DNA fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 68:

GGAGGGAACG CGTGAAGATG TTG	23
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(2) INFORMATION FOR SEQ ID NO: 69:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 28 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 69:

Met	His	Ser	Phe	Cys	Ala	Phe	Lys	Ala	Xaa	Xaa	Gly	Xaa	Cys	Xaa	Xaa
1				5					10					15	

81

Xaa Xaa Xaa Arg Xaa Phe Phe Asn Ile Phe Thr Arg
20 25

(2) INFORMATION FOR SEQ ID NO:70:

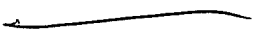
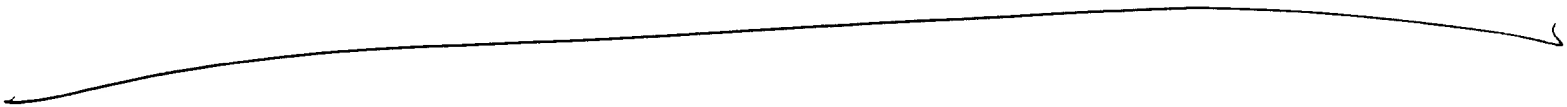
(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 4 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULAR TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:

F *B* *Cont*
Glu Ala Ala Glu
1 4



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